



## Illogan School Science Policy



### Introduction:

This policy outlines the teaching, organisation and management of the Science taught and learnt at Illogan Primary School. The school's policy for Science follows The National Curriculum for Science Guidelines and the Early Years Foundation Stage Framework and aims to ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of Science teaching and learning.
- Develop understanding of the nature, processes and methods of Science through a variety of different scientific enquiries that help them to answer questions about the world around them.
- Children are equipped with the scientific knowledge required to understand the uses and implications of Science, today and for the future. (STEM).
- Children are encouraged to understand how Science can be used to explain what is occurring, predict how things will behave, analyse causes and evaluate outcomes.

### Aims:

A high-quality Science education provides solid foundations for understanding the world. Through building key knowledge and understanding of concepts, pupils should be encouraged to recognise the power of explanation and develop a sense of curiosity about natural phenomena.

### Our aims are:

- For staff to work cooperatively to deliver a broad and balanced Science education which incorporates a range of learning styles to suit individual needs.
- For children to have the right to equal opportunities in Science in our school regardless of their background, religion, race, gender, physical or intellectual ability.
- For children to become curious about the world around them and the things that they observe, experience and explore.
- For children to use their experiences to develop understanding of key scientific ideas through enquiry.
- For children to develop skills of sorting, classifying, planning, predicting, questioning and drawing conclusions from a range of activities.
- For children to acquire and refine practical skills necessary to investigate ideas and questions safely.

- For children to practise mathematical skills and enhance literacy skills (where possible) within real contexts.
- For children to develop language and vocabulary skills through talking about their work, presenting their findings and using appropriate scientific terminology whilst doing so.
- For children to use progressively technical scientific and mathematical vocabulary and draw diagrams and charts to communicate scientific ideas.
- For children to use a range of media (including ICT) to extract and present scientific information.
- For children to work collaboratively with others, listening to their ideas and treating these with respect.
- For children to develop an understanding of how to respect the environment and living things, including themselves and each other.
- For children to develop responsibility for their own health and safety and that of others when undertaking scientific activities.

#### Teaching and Learning:

To provide adequate time for developing scientific knowledge, skills and understanding, each teacher will provide weekly Science lessons. These may vary in length based on the objectives being explored.

There are a variety of ways in which the teaching and learning may be effective:

Our school aims to encourage learning through investigation, with an emphasis on first-hand experience.

Science lessons should typically contain some of the following elements:

- Whole class, group or individual learning.
- Practical, investigative tasks.
- Recording, communicating ideas orally and in writing.
- Practical element.
- Use of discussion guidelines and stem sentences.
- Vocabulary at the start of every session.
- Revisiting/recalling key knowledge (Heartbeats)
- Questioning and opportunities for mini-plenaries throughout..
- Scientific and ambitious vocabulary.
- Opportunities for writing, maths and reading skills to be embedded.
- Purple pen editing in science.

### Foundation Stage:

Science is an integral part of topic learning and should be embedded throughout activities. At this stage, the 'understanding the world' area of learning is evident throughout other learning tasks.

### Key Stage 1:

The main focus of science teaching in Key Stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them.

- They should be encouraged to be curious and ask questions about what they notice.
- They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out using secondary sources of information.
- They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.
- Most of the learning about Science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.
- Pupils should read and spell scientific vocabulary at a stage consistent with their current reading and spelling knowledge.

### Lower Key Stage 2 – Years 3 and 4:

The main focus of Science teaching in Lower Key Stage 2 is to enable pupils to broaden their scientific view of the world around them.

- They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions.
- They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple fair tests and finding things out using secondary sources of information.
- They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.
- 'Working scientifically' must always be taught through and clearly related to substantive Science content in the programme of study.
- Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing reading and spelling knowledge.

### Upper Key Stage 2 – Years 5-6:

The main focus of Science teaching in Upper Key Stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas.

- They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically.
- At Upper Key Stage 2, they should encounter ideas that are more abstract and begin to recognise how these ideas help them to understand and predict how the world operates.

- They should also begin to recognise that scientific ideas change and develop over time.
- They should select the most appropriate ways to answer Science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out fair tests and finding things out using a wide range of secondary sources of information.
- Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.
- Pupils should read, spell and pronounce scientific vocabulary correctly.
- 'Working and thinking scientifically' must always be taught through and clearly related to substantive Science content in the programme of study.

#### Home Learning Opportunities:

The regular Science lesson(s) will provide opportunities for the children to develop scientific skills, knowledge and understanding according to the National Curriculum and are a vehicle to motivate children to extend their learning beyond the classroom.

Using 'Knowledge Organisers' and 'Heartbeats', teachers will encourage children to find out information and practise scientific skills out of school time. In addition, they will provide opportunities to share and value the children's efforts outside school, within future lessons.

#### School Overview of Science:

The programmes of study for Science are set out year-by-year for key stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the keystage. Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. 'Working scientifically' specifies the understanding of the nature, processes and methods of Science for each year group and should not be taught as a separate strand. This element will be embedded throughout the delivery of the Science curriculum at Illogan. Cross-curricular links should also be made where possible to enhance the learning of Science.

#### Planning

It is the responsibility of the class teacher to undertake the Science planning for their class or oversee it where another may be taking the class.

#### Long term plans:

Long-term plans (or yearly plans) are shown on the curriculum overview for each year group.

#### Medium term plans:

Medium term planning should show an overview of what will be covered week by week. Plans should contain the WALT, date and lesson number in the block of sessions planned. They also contain the Science 'Heartbeats', key vocabulary and prior learning. Opportunities for 'Scientific Enquiry' should be included wherever possible.

### Assessment:

It is the responsibility of the class teacher to maintain an overview of each child's progress in Science. Teachers should assess science in the following ways:

### Formative assessment (informal):

Assessment in Science can take both formal and informal forms. Informal assessment can be done through pre-assessment tools, observations of the children, marking their work and questioning children to identify what they have understood. Recordings of significant progress or events can also be evidenced in the lesson evaluation e.g recall of Heartbeats

### Summative assessment (formal):

Currently, formal assessment in Years 1 to 6 is completed in a number of ways; usually after each unit of Science learning. Class teachers should track, monitor and update children's progress on a regular basis using end of unit assessments or using self and teacher response success ladders/ feedback. Individual progress should also be reported back to parents through either parent meetings or a written report.

### Resources:

The school holds a central bank (Science cupboard) of teachers' resource books and frequently used resources. Children are encouraged to choose from a range of equipment and are trained in the safe and considerate use of animals, plants and consumable materials. Expensive and less frequently used items are also kept within the central store. The Science coordinator is responsible for maintaining this area and ordering any necessary items that have been identified as a need.

All staff members have a shared responsibility for collecting and returning necessary items to the correct place to ensure that resources are easy for all staff to access.

### SEN, Inclusion and Equal Opportunities

Activities should be carefully planned by the class teacher and be differentiated where appropriate for children with SEN and equally the more able and Gifted and Talented children. All resources/materials have been reviewed with equal opportunities in mind, e.g. race, gender, ethnicity. Learning experiences in science will be available to every child, regardless of race, gender, class or ability. Pupils will be encouraged to value social and cultural diversity through scientific experiences. They will listen to, and participate in, a variety of experiences in a positive and constructive role.

We recognise that in all classes, children have a wide range of scientific ability, and so we seek to provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways:

- setting tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty;
- grouping children by ability and setting different tasks for each group;
- grouping children in mixed ability groups;
- providing resources of different complexity, depending on the ability of the child;
- using classroom assistants to support the work of individuals or groups of children.

#### Health and Safety:

The school's "Health and Safety Policy" should be consulted for details regarding scissors, craft tools, electrical equipment, wet areas, heavy equipment and use of other tools. When planning activities, safety issues should be identified in detail in the weekly plans and acted upon accordingly. Children should be made aware of safety issues and, where appropriate, the reasons behind them. Activities that take place away from the school's premises will require a separate risk assessment form to be filled in.

#### Monitoring and Evaluation

##### Role of Science coordinator:

- To be enthusiastic about Science and demonstrate good practice.
- To work alongside colleagues in planning where needed (progress and activities).
- To work alongside teachers in the classroom, monitoring the planning and delivery of lessons.
- To coordinate and arrange staff in-service training as required.
- To audit resources, identify needs and order equipment in school after consultation with colleagues.
- To manage the Science budget.
- To "sample" the work of children across the age range (curriculum monitoring) and provide feedback on planning and books.
- To review and evaluate the effectiveness of teaching and learning of Science, including opportunities for children to develop their spiritual, moral, social and cultural well-being.
- To provide guidance on the implementation of the Science policy.
- To suggest appropriate assessment activities where needed.
- To provide support to those colleagues who request/require it, including help with planning and organisation.
- To create an action plan of the steps to improving science teaching and learning and evaluate and update these regularly to reflect progress.

Role of SLT:

- To lead, manage and monitor the implementation of the scheme of learning to ensure that Science remains a high-profile subject in the school's development aims.
- With the Science coordinator, keep the governing body informed about the progress of the subject and the scheme of work.